

Paramagnetic species

Shifts the chemical shift position



Relaxation time

Paramagnetic Shift (contact shift)

NPTTEL

Spin = $\left\{ \begin{array}{l} \rightarrow +\frac{1}{2} \\ \rightarrow -\frac{1}{2} \end{array} \right.$

$+\frac{1}{2}$ —
 $-\frac{1}{2}$ —
out side
magnetic field

$E = h\nu$
Radio
frequency

$-\frac{1}{2}$ —
 $+\frac{1}{2}$ —
transition
Magnetic field

^1H NMR diamagnetic: 0 to 15 ppm

NPTTEL

Protein M.Wt: in Kilo Daltons

referred as: KD

I Isolated Protein ~~Purity~~ Pure protein

purity can be ↓
evaluated by

MALDI

NPTTEL

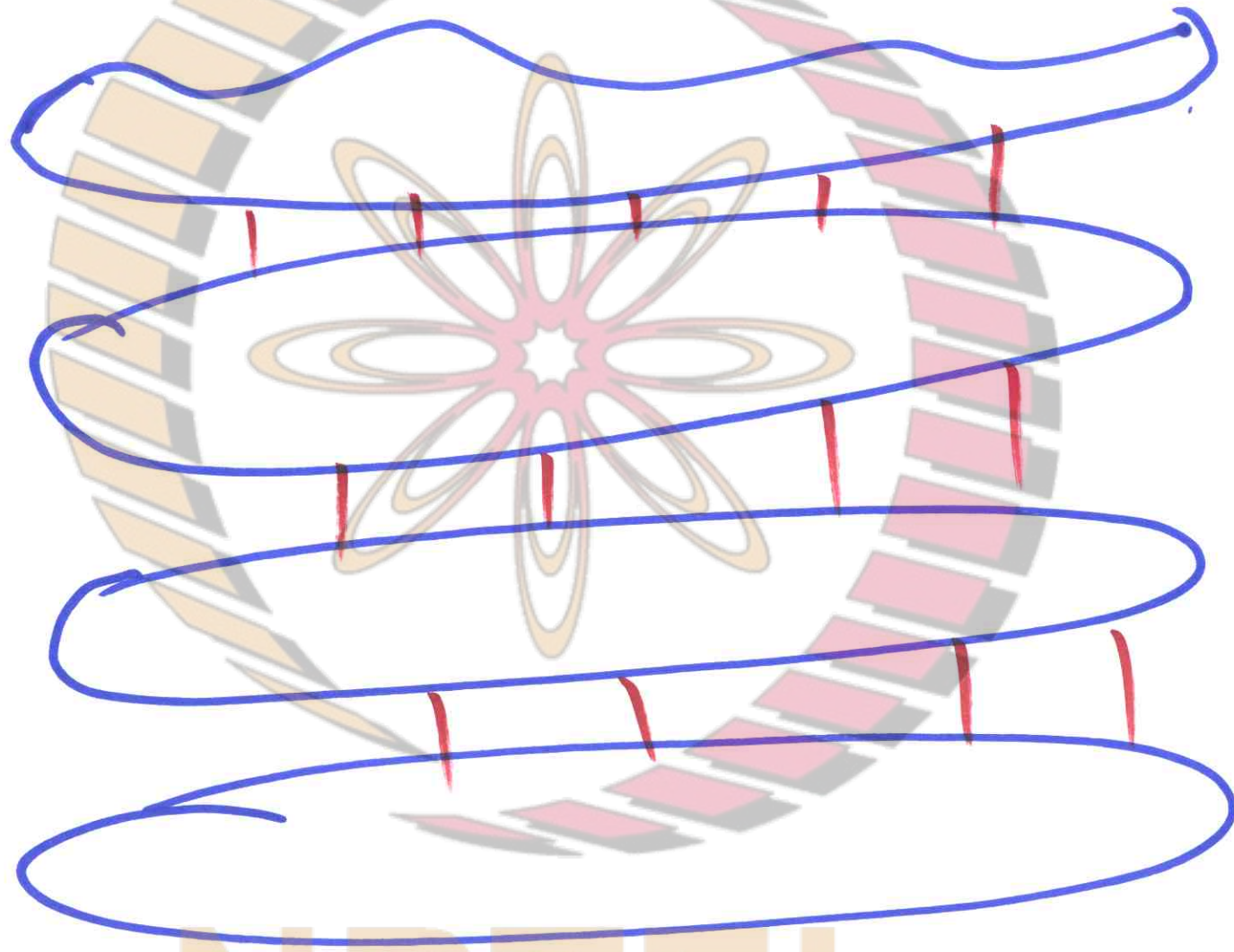
Peak position in MS $\rightarrow$ m/z $\rightarrow$ charge $1, 2, 3, \dots$

Mass = Peak position $\times z$ in the spectrum

from the spectrum

TFA $\rightarrow$ add H^+ to the protein

addition of proton: 1 mass added
+ 1 charge added



NPTEL

Cell wall formation